

Amendments to the Specification

Please **add** the following paragraph at page 1, line 2:

-- This application claims the benefit, under 35 U.S.C. § 365 of International Application PCT/US03/08353, filed March 19, 2003, which was published in accordance with PCT Article 21(2) on October 9, 2003 in English and which claims the benefit of United States Provisional patent application No. 60/367,794, filed March 27, 2002. --

Please **delete** the paragraphs beginning at line 7 on page 1 as follows:

~~-- 2. Description of Related Art~~

~~———— The basic idea of selecting between two diagonal averages and a vertical average has probably been used by many others previously and was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's.~~

~~———— A simple method of deinterlacing a field of luminance pixels to create lines of pixels that are spatially in between the existing lines of the field is to average the values of the pixel directly above and below to create each output pixel. This method produces jagged edges on diagonal details in the field such as on steps that are not horizontal or the on edges of the stripes on a flag as it waves in the wind and the angles vary.~~

~~———— A better method for enhanced diagonal detail, chooses between three pixel averages: the vertical average previously described and a left and right diagonal average. The left diagonal average is computed by averaging the value of the pixel to the left and above the position being interpolated with the pixel to the right and below. Likewise, the right diagonal is the average of the pixel to the right and above the position being interpolated with the pixel to the left and below.~~

~~———— The basic idea of selecting between two diagonal averages and a vertical average was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's. The simplest algorithm choosing between the three choices evaluated by Sarnoff was denoted in their report as the DIAG1 algorithm. Other algorithms that Sarnoff explored and simulated to attempt to solve the noisy decision problem were denoted DIAG3,~~

~~DIAG3W, DIAG3WW. DIAG3 uses a more complicated decision algorithm than DIAG1. DIAG3W adds a noise constraint to the DIAG3 algorithm.~~

~~—— The DIAG1 algorithm for selecting between two diagonal averages and a vertical average computes and compares three differences using the same pixel values as the averages. For each average, the corresponding difference is computed and the absolute values of those differences are compared to find a minimum. The pixel average that corresponds to the minimum difference is selected to be the interpolated value.~~

~~—— The Sarnoff work mentioned is documented in two reports: Spatially Adaptive De-Interlacing Techniques for Digital Feature TV, December 31, 1990 and Digital Feature TV Project Final Report, March 31, 1991.~~

~~—— Even with the use of having multiple choices to consider for a spatial interpolation estimate, the existing algorithm is unable to enhance picture quality for lower angle diagonals. There is a long felt need for an improved algorithm that is effective for lower angle diagonals. --~~

Please **add** the following **new** paragraphs after the paragraph ending on line 7 on page 4:

-- The basic idea of selecting between two diagonal averages and a vertical average has probably been used by many others previously and was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's.

A simple method of deinterlacing a field of luminance pixels to create lines of pixels that are spatially in between the existing lines of the field is to average the values of the pixel directly above and below to create each output pixel. This method produces jagged edges on diagonal details in the field such as on steps that are not horizontal or the on edges of the stripes on a flag as it waves in the wind and the angles vary.

A better method for enhanced diagonal detail, chooses between three pixel averages: the vertical average previously described and a left and right diagonal average. The left diagonal average is computed by averaging the value of the pixel to the left and above the position being interpolated with the pixel to the right and

below. Likewise, the right diagonal is the average of the pixel to the right and above the position being interpolated with the pixel to the left and below.

The basic idea of selecting between two diagonal averages and a vertical average was explored by the Sarnoff Research Laboratories (Sarnoff) in a research project funded by Thomson (assignee herein) in the early 1990's. The simplest algorithm choosing between the three choices evaluated by Sarnoff was denoted in their report as the DIAG1 algorithm. Other algorithms that Sarnoff explored and simulated to attempt to solve the noisy decision problem were denoted DIAG3, DIAG3W, DIAG3WW. DIAG3 uses a more complicated decision algorithm than DIAG1. DIAG3W adds a noise constraint to the DIAG3 algorithm.

The DIAG1 algorithm for selecting between two diagonal averages and a vertical average computes and compares three differences using the same pixel values as the averages. For each average, the corresponding difference is computed and the absolute values of those differences are compared to find a minimum. The pixel average that corresponds to the minimum difference is selected to be the interpolated value.

The Sarnoff work mentioned is documented in two reports: Spatially-Adaptive De-Interlacing Techniques for Digital Feature TV, December 31, 1990 and Digital Feature TV Project Final Report, March 31, 1991.

Even with the use of having multiple choices to consider for a spatial interpolation estimate, the existing algorithm is unable to enhance picture quality for lower angle diagonals. There is a long-felt need for an improved algorithm that is effective for lower angle diagonals. --